

JOURNAL

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pah zan

Zao names

Cua puma) kana - black bear
_{black}

Cua pahzya) kana - grizzly
_{gray}

Izka) kana - clump tree
_{wood}

Quawa pawawa - spruce rabbit, L. bird

upititila

1904

July 4.

Left Washington at 10:05 A.M.
By P. for New Mex. & got
well over the mts. & down toward
the Ohio line before dark.

Was surprised to find most of
the wheat & rye (winter varieties) ^{cut}
cut & stacked. In the valley just above
Cumberland they were reaping. The day
was fairly warm before we entered
the mts. but as we reached the summit
of the range the air was cool, fresh
& bracing, the country had a spring
like appearance, the big laurel was
full of blossoms. Beautiful meadows,
streams & springs, open woods and
hemlock groves made us want
to stop and pitch a tent.

We looked for good camp
grounds & decided on one 5 or 6
miles east of Deer Park &
another about as far west of
Oakland. These are wild
spots that would be a lot
of exploring & study.

July 5. Woke up in southern Indiana & reached St. Louis at noon. Across southern Indiana & Illinois the season is more advanced than at Washington. The *Lycium radicans* are abundant all along on the fences & in full bloom while our vine at home has only small buds that will not open for a week at least & none were seen in blossom east of the river. The wheat & rye are all in shock & have been for a long time. Corn & other crops are in advance of those around Washington as they should be.

Went out to Exposition in P.M. & especially enjoyed the Philippine exhibit.

Left for Kansas City at 10 P.M. via Mo. Pac.

Kansas

July 6. Reached Kansas City at 8 AM. on Mo. Pac. & left at 9:45 on Santa Fe for Pueblo. The Kaw River is over its banks & full of floating drift. lots of fields flooded. All streams & ponds full. Country green & rich but crops show effects of too much water.

No trace of Lower Sonoran plants noticed near Kansas City or beyond. Westward the woods soon retreat to narrow fringes of low trees along streams mostly box elders, cottonwood, elm, low oaks^{oaks} & alders. Near Burlingame we heard a bluejay. & west of Osage City heard two meadowlark songs that from the train seemed to be neglects.

West of Osage City the country becomes more plains, & is characterized by lots of plains species of plants, *Petalostemon* idace, *Amorpha canescens*, *Psoralea (argophylla)*, *asclepias*, *Merolix* etc.

West of Emporia we follow up the Cottonwood River which is out over

the valley. Ranches & towns are flooded, grain fields are big lakes houses up to the windows in water & an whole town standing in 4 to 6 feet of water. For miles our train flows through water nearly over the wheels sending great waves off on the sides & leaving a long wake behind where no track is visible.

At Elmdale a mockingbird was singing.

Until dark we continued to cross flooded bottoms with water over the tracks.

To Pueblo

July 7. Reached La Junta soon after daylight + Pueblo about 7 A.M. got some good notes on plants between the towns + around Pueblo where we have to stay till 12:20 tonight for a train on D. & R.G. to Las Alamos.

The country around Pueblo is very arid but the river valley is irrigated + covered with farms of alfalfa, corn, fruit etc. Apple + cherry trees are loaded with fruit.

Out on the ridge just east of town the country is arid + desert like with *Atriplex canescens* + *confertifolia* the dominant shrubs over one slope, *Opuntia arborescens* over another, or *Sarcobatus* over dry bottoms.

The mts lie off to the west of town but on a long ridge to the N.E. ~~are~~ is black timber, probably nut pine or juniper.

A lot of birds were found in the little park where water was running from the hydrants.

Saw one *Callipepla squamata*.

to Taos

July 8. Woke up before daylight just before going over La Vita Pass & watched every change as soon as light enough. Reached the pass about sunrise.

Passed through oak & nut pine foot hills then yellow pine & at summit were in *Pinus murrayana*, firs & spruces & aspens. Steep slopes, half timbered, some big meadows & parks, small streams, no ranches, good camp grounds. summit 9242 feet, cold.

Down west slope the same kind of country but gentler slopes, long canyons, oak brush & timber.

Canadian zone covers the summit of the pass & while penetrated by strips of transition on hot slopes a strip 20 miles wide along the crest of range can be mapped as Canadian. Transition zone covers the sides of the range irregularly and before the open valley begins it is all Upper Sonoran. Ft. Garland is near the eastern edge of the valley but out in the

open flat bottom on a level with
the whole San Louis Valley, which
is an enormous arid plain over
a lake bed. At Alamosa we crossed
the nearly dry bed of the Rio Grande
and turned south on the narrow
gauge to Antonito, then transferred
to the mixed train for Tres Piedras.

The San Louis Valley is
all Upper Sonoran, very arid,
and now very dry & barren save
for irrigated areas mainly around
the edges where streams come
down from the mountains.

The Rio Grande runs through the
valley to the south but the valley
floor slopes down to the north.
The highest part of the valley, or
its southern rim is just south
of the New Mex. line, where a series
of old lava craters reach
across & lava flows have
built up a dam that has
evidently held the water in a
great lake but through which

The Rio Grande has cut a ^{deep} canyon with stratified lava walls. This canyon reaches from the Colorado line to Embuda & is from a few hundred to 1000 feet deep.

The principal vegetation of the San Luis Valley is *Artemisia tridentata*, *Bigelovia canescens*?, *Tetradymia*, *Gutierrezia*, *Sarcobatus* & cacti, a little white spined *Opuntia*.

Along the N.E. side of the valley the Sangre de Cristo Mts. rise high & bare & white & steep. I never saw a more utterly barren range, that reached so high. Oak brush & scrubby stuff grows to cover the base, but the upper slopes that should be timbered are bare slide rock. On the east the Spanish peaks in the Colihra Range are not so high. The San Juan Range west of the valley is apparently low & mainly timbered.

Ute Peak is a big crater south of the Colorado line over the east base of which we pass on the narrow

gauge. It is rounded + mainly timbered with nut pine around the base, then a belt of yellow pine + high up on the N.E. side a considerable area of aspen + spruces. This is the largest of half a dozen similar spots in this part of the valley. Olla Peak just west of the Rio Grande is very similar + black to the base with timber, apparently from a distance both nut pine + yellow pine.

In San Juis Valley we saw 4 or 5 *Lepus campestris* but no *texianus* + no one I could find had seen a black tailed jack rabbit. One ranchman told me of a few antelope in the valley yet, but says they are scarce. *Cynomys gunnisoni* is common.

Reached Teah Piedades at 12 + started for Taos at 1 P.M. arriving at 7 P.M. The valley is very dry + barren. No rain, no grass, no crops, very little water in Rio Grande + Hondo.

Zas

July 9. Moved over to Mr. Phillips house + went out to Martinez place to look at my horses. Found them in good condition.

July 10, Sunday. Did not get much done, as Surber is not here yet + none of my supplies have come. Went out to Pueblo.

July 11. Hired an Indian, Sam Elk, and got my outfit together + moved up into the canyon $2\frac{1}{2}$ miles above the Pueblo + camped in the big grove of *Populus Angustifolia* called Glorieta. Camped late but were glad to get away from town.

July 12. Took most of the day to get camp straightened out + get the wagons repaired + in shape for travelling.

July 13. - Sent the other wagon down to be repaired + got mail. Wrote letters + did things around camp.

July 14, Took a trip over valley
for birds & got quite a lot of
specimens. Wrote some but am
half sick not very energetic.

July 15 - Climbed over the slopes
above camp, made up skins,
wrote up notes & set traps.

July 17 Took an Indian, Manuel,
and went up the Mts., following up
to head of Lacerro Creek at as it
comes out of Bear Lake at 12000 feet,
then over the ridge above timberline
overlooking the Indian's lake, from a
point at 12700 feet, then down to
Pueblo Creek and down it to camp.
A hard days ride over glorious
country with good notes along 2
lines of the mountain slope.

July 18, Sunday, Made up specimens
& wrote up notes.

to Hondo & Taos Mts.

July 19, Packed up + went to Taos for supplies + then over to Arroyo Seco + the Hondo. Camped 2 miles up the Hondo Canyon. After leaving the Indian grant sheep have made the valley a desert. The crops at Arroyo Seco + the Hondo are pretty good.

July 20. Continued up the Hondo Canyon to Twining where we left our wagons + heavy outfit + put our loads on 4 pack horses continued up the South Fork, or Lake Fork to the little lake at head of canyon about 5 miles south of Twining. Camped 100 feet above the lake on ridge at 11200 feet by aneroid. Twining read 9500, but it reads low today.

July 21. Climbed to top of Wheeler Peak as called here, but Taos Peak of the land office map, which rises from east edge of our little lake. Aneroid at camp read 11200, at timberline 12000 + on peak 13500. Another peak just

north of Blue Lake, head of Pueblo Creek, & 2 miles S.E. of Wheeler Peak seemed to be about as high so we went to it & found it 13400. Wheeler Peak or Taos Peak, is evidently the highest peak in the range & the highest in New Mexico. It has gentle, mainly grassy slopes & a horse can be ridden to the top & along the whole crest of the range. The Peak to the south of the highest should probably be called Taos Peak as it is the highest one overlooking the lake of the Taos Indians. We hunted the high slopes for Ptarmigan but found none. It rained & hailed while we were on the peaks so we had little chance of finding things. My hands got so cold I could not write plant names in my book.

Two large flocks of sheep are herded in the head of Red River canyon on the east side of Wheeler Peak. They were run out of Sacorro Creek canyon by the Indians.

July 22 - Sent Sam Elk down to Amigitt for mail & while he was gone explored the upper end of the canyon around the meadows above the lake. In P.M. moved camp to falls at south end of lake. Rainy & cold part of day.

July 23 - Sent Sam Elk & his cousin over ridge for Ptarmigan. They got one & saw 2 more. Made up skins, set traps, made plant list. Cold in morning, hard frost, cold rain after noon.

July 24, Sunday, Too cold & rainy to do much but try to trap warm.

July 25 - Sent Sam Elk & Taos for guns & grub. We climbed to top of Ntulis peak & followed miles along crest of range in search of Ptarmigan without success. Got a fine set of plant notes with limits of range. Set a line of traps up to 12700 feet or 300 feet above extreme timberline.

Laos Mts.

July 26 - Went to traps & climbed over upper slopes but did not get much of importance. Sam Elk returned just before dark with my old shot gun.

July 27 - Took up line of high up traps as the *Peromyscus* proved to be only *Microtus mordax* & the woodchucks got into my fox trap so fast the fox has no show.

July 28 Climbed to top of ridge just east of Wheeler Peak & followed crest of ridge to top of next peak east (Red dirt Mtn. - *Quito pan na nana*) then over the peak & along the ridge to the peak N. E. of the Blue Lake. Found a flock of *Lamprolaima australis* & shot one, but could find no ptarmigan. The clouds covered the Mts. most of day & half the time I could not see far. Often I was in a dense cloud. Toward noon the clouds cleared for awhile & I had a grand view of the Mts. north & south. The Spanish Peaks & Sangre de Cristo.

+ Castilla Peak to the north, the
Tucacas + Pecos Baldy groups to the
south, the Rotons away to the N.E.
+ several ranges to the west of the
Rio Grande. The Blue Lake of the
Tasos Indians was brilliant when
the clouds lifted, deep turquoise blue
varying with different lights to brilliant
emerald green around the edges.
It is very deep + beautifully set
in the Hudsonian forest just below
timberline.

Several showers came up just
after noon + I got soaked in ice water on
the peaks. Numerous local showers
could be seen on all sides, some
crossing the arid valleys where rain
is much needed.

Slid down the Mtns. + returned to
camp at 2 P.M. tired + wet + hungry
but with a good lot of notes on
distribution + general character
of country.

Zaos Mts.

Aug. 2. Packed up & moved camp down to the meadow only 2 miles above Twinning and at 10800 feet. Here the canyon slopes north with steep slopes about 2000 feet high on each side, so the bottom is practically a N.E. slope. Most of the plants of the meadow are Hudsonian species. So are many of those of the woods, while on the slope east of us where it turns toward the south west the aspens run 500 feet at least above us. In the bottom of the gulches they do not come up to 500 feet below.

Aug. 3. Set traps near camp but it rained so much of the day I could not do much.

Aug. 4. Goat arrived in evening

Aug. 5 - Sent Sam Elk to Arroyo Seco for supplies

Twining

Aug. 6. Went down to Twining and then up the main Hondo and to top of ridge above Sawmill & over ridge a little way on trail leading down to Red River. A good wagon road runs to summit. The sawmill is at 11100 feet, the summit half a mile beyond is 11200. This is not a main divide and it is said to be a little higher than the summit between Red R. & Morro Valley, which forms the main divide. This summit is merely a saddle between Gold Hill & Wheeler Peak. It is heavily timbered with a mixture of Canadian & Hudsonian trees & plants. *Aspens* do not reach up to it, and *Pinus aristata* comes down to 11000 on the S.W. slope.

Saw an old fashioned crania on the way up to saw mill. Intended to photograph it on my way back but forgot to -



Hondo Canyon

Aug. 8. Broke camp & packed down to Twining, then loaded up wagon & continued down canyon to old saw mill near lower end & camped at about 2 or 3 miles above Toll gate. Aneroid at Meadow Camp read 10700, at Twining 9850, at old saw mill camp 8350.

Aug. 9. Took the team & went down the Hondo for hay & grub. Went through the little Mexican town of Valdez and to a ranch 2 or 3 miles west of Arroyo Seco where we found potatoes, beets, cabbage & lettuce, & such green food that we were hungry for & also found fruit trees growing & learned something of the crops & climate as well as getting a list of valley birds & some good mammal notes. Aneroid at camp read 8150, at Toll gate 7900.

Hondo Valley

Aug. 10. Remained at camp in canyon at old saw mill.

Aug. 11 - Broke camp & went down to Toll house at mouth of canyon & camped for the night just below it. Hunted in the Hondo bottoms for a mile or two below camp down among the farms. Found *Castilleja*, *Gibbs*, *Pentstemon*, *Lupines*, & *Helianthus* flowering in great profusion and the humming birds swarming over them, Brilliant male *rufus* were the most numerous but *Sitta caliope* were common.

The farms are in little squares like a checker board, running across the bottoms on both sides of the Hondo. Wheat, corn, and peas are the common crops but oats, barley, potatoes, squashes, cabbage, onions, lettuce, and beets are raised. Lots of apples are raised & the trees are thrifty & bear well. Plums are raised & seem to be the big blue plum. Pears & some peaches are said to be raised & we saw a few cherry trees.

Hops grow in wild profusion over the bushes & are loaded with fruit. Choke-cherries are abundant & just ripening & the trees are full of robins & cedarbirds. *Ribes leptanthum* grows in great clumps & hedge rows & is loaded with ripe fruit that is delicious if you risk the thorns in getting it. The people do not seem to use them much & only the birds pick them extensively.

The Mexicans live in little adobe houses in as primitive a style as could be imagined, irrigating their little fields & living apparently on what they can raise. Their yards are usually full of hollyhocks, poppies, marigolds & such homely flowers.

In the middle of the valley is the little old town of Valdez - long called San Antonio, as typically Oriental a village as could be found in the heart of Mexico.

The mesa along the sides of the river valley is 300 or 400 feet above.

To Questa

Aug. 12.

Moved camp down the river about 4 miles and camped on top of plain at south edge of Horse Valley. Toll gate camp 7900 feet, Valdez 7700, camp on mesa 8000.

Took Sam Elk & went over to Taos for supplies & to send specimens. We are about 10 miles nearly due North of Taos.

Aug. 13 — Remained at camp, hunting & trapping in river valley & out over plain.

Aug. 14 — Broke camp & followed down the river about 2 miles to crossing where an old brewery used to be kept by a Frenchman who was killed by the Indians at the same time as Governor Beaubien. Then followed up a long dry wash to the north to Agua Lobo, then down to San Cristobal, then up again to Loma, then down to near the Red River between the north & Questa. Came about 20 or 25 miles through

juniper & yellow pine country, open woods with good grass but little water. The 3 settlements mentioned were all we saw.

At camp the aneroid read 8000, at the Hondo River 7400, at Pena de Lobo 8500, at San Cristobal 8100, at Lamy 8800; camp near Red River 8000.

The whole country north of the Hondo & east of the Rio Grande is covered with either yellow pine, mainly on N.E. slopes or above 8500 feet on S.W. slopes, or a fine growth of Nut pine & juniper, including both species of juniper. The timber also extends along both sides of the Red River valley, but open plain stretch north from near Questa. On the west side of the Rio Grande the numerous craters & lava ridges are all timbered with yellow pine or nut pine which covers more than half of the country. The open valley strips are arid sage plains that wind around the buttes. The Rio Grande Canyon is all

To Questa

timbered with nut pines & junipers, well
back of over the lava rock rim.
The creek at San Cristobal runs a
little ditch full of good water that
keeps a narrow line of little ranches
green.

Camped at a spring 200 feet
above Red River among beautiful junipers
& big yellow pines. Good grama
grass covers the ground & furnishes
fine feed for the horses. Near the
settlements the grass has been
mainly killed out by over grazing,
but the scarcity of water protects
it farther back.

Aug. 15. Struck Red R. about a mile
from camp & then followed up
the valley about 2 miles to Questa.
Then about 3 miles farther up into
the mouth of the Red River Canyon
& camped.

Aneroid at Camp 8050, at Red R.
7850, at Questa 8100, at Camp 8200.
Came about 5 miles.

To Red River town

Aug. 16 - Continued up the beautiful canyon to the little mining town of Red River where we got a good dinner + then followed up Bitter Creek about 6 miles to the fork + then up Lost Trail Creek about 2 miles farther + camped in a little park in the aspens at 10700 feet. The last 2 miles of the road was very steep + stony + wet + slippery from a hard shower, so the team was about worn out when we reached camp at 6 P.M.

Aneroid at camp in morning read 8200, at Red River town 9250, mouth of South Fork 8500, Camp 10700.

Upper Sonoran zone reaches up on S.W. slopes to 8500 feet + a few nut pine + junipers straggles up farther. On N.E. slopes it does not run above about 7800 feet.

Transition zone begins on N.E. slopes + in bottom of valley along streams at about 7800 feet near the mouth of the Red River. *Populus angustifolia* grows along the streams + yellow pine comes

down along ~~the~~ cold slopes to
the Rio Grande. Up the canyon yellow
pine extends to about 9000 feet on S.W.
slopes but *Pseudotsuga* + *Pinus flexilis*
reach to 10000 S.W. in abundance.

The ^{upper} slopes of the canyon become to
stony + rough for *ponderosa*.

The town of Red River is in a mixture
of Canadian + Transition.

Canadian zone - comes down
in the canyon on steep N.E. slopes +
quakes to about 8500 feet - a trace to
5200, but begins on S.W. slopes at
about 10000 feet.

Hudsonian zone shows a trace
over summit at Anchoas mine at
11000 feet in meadows + on cold slopes.

The whole Red River valley is heavily
forested except when the bottom widens
out into meadows + fields and
where the slopes have been burnt.
Much of the timber is valuable for
lumber + young forest is rapidly
covering the burns.

Pinus flexilis deserves special
mention from its abundance +

good size. For miles both along
the stony + barren sides of the valley
it is the dominant tree and often
with a trunk $1\frac{1}{2}$ to 2 feet in diameter
that would cut 2 good 16 foot logs
not very limby. It takes the place
of ponderosa in the rougher part
of transition zone. Pseudotsuga
also is abundant all up the valley
and a few trees straggle up to
10500 feet on S.W. slopes.

Populus tremuloides is probably the
most numerous tree in individuals
+ often forms beautiful groves
of trees 8 inches to a foot in diameter
while many trees could be selected
2 feet in diameter that would cut
3 good logs above a foot in diameter
at top. Much of the original forest
has been burnt out and great areas
stand dead + bare with the bark
dropping from the hard trunks of
the vast like spruces + firs.

In places fir has run up the steep
slopes in narrow strips, leaving
pools between the solid black green.

Anchor Mine & to Castilla River

Aug. 17 - Remained at our aspen park camp to do some work & let the roads dry so we can get up the rest of steep slope to summit. Went up to Anchor mine & back to sign up the country. Concluded we had better push on to the Castilla Peak country tomorrow.

Aug. 18 - Fortunately there was no rain in the night & the roads were in good shape. Put both teams on the load & hauled it to top of the steep slope, a mile & a half, & then went back for the buggy. Zipped the load over on a side hill but it fortunately struck & turned & went only on the side, the only damage was a broken back top. Hauled it back with the team & a rope & continued up the hill.

On top of the first ridge at the Anchor mine, where the country opens out in big meadows & grassy parks at 11,500 feet we strongly tempted to camp for a few days & work toward the head of Bitter Creek to the west where we could

timberline slopes on Latir Peak.
A little run through the woods showed
abundant signs of deer & swansons
rabbits & blue grouse, there are said
to be a good many black bears, the
stream is full of trout, strawberries
are ripe & very abundant, all of
which, with the combination of the
big parks & meadows bordered by
beautiful forests & full of creeks
& springs made a tempting combination.
Still we thought it best to get
over the main divide & into the
Castilla country.

After leaving the Anchor Mine
we climbed another long ridge,
the divide between the waters of Red
R. & Castilla R., up an easy grade
through a forest of dead spruces
to the summit at 11350 feet, where
we had a magnificent view of the
Taos Mts. from the north side.
Whelan peak & Red earth peak
with high rocky peaks to right &
left made a striking display while
Gold Hill with its big N.E. are is a

fine peak by itself. The view is up
the South Fork of Red River & over
some 20 or 25 miles of finely
forested country.

~~Gold~~ Baldy looms up bare &
bald as well to the S.E. of us &
apparently not 25 miles away.

To the North a peak reaching only
a little above timberline must be the
Castilla Peak of the land office map
but Sam Elk thinks it is Powell peak
& that Castilla is the higher group
west of the north arm of Castilla
River.

From the summit we go down
a long easy grade to Labelle
at 10100 feet at the edge of the big, open
park valley of Cowanoke Creek where
we strike the Elizabethton & Castilian
road. A few miles to the west we
strike the Cowanoke Creek & at
9700 feet and follow down it to the
west & about 5 miles to Castilla
R. at 9400 feet, then up the river
a mile or two & a quarter of a mile up
a side gulch & camp at 9700 feet.

The Comanche + Castilla valleys are wide, grassy park like valleys with here + there a grove or point of timber coming down on the side/slopes. They afford fine summer ranges for cattle + sheep. We in the Sangre de Cristo Grant + evidently are leased or rented to mainly non resident stockmen. We saw a few sheep camps but no ranches. A few old abandoned ranches mark the places where early settlers were driven out of the grant. One old saw mill above the mouth of Comanche Creek was abandoned with a big pile of logs left unsawed.

The timber along the sides of the valley is mainly *Picea pungens* and *Aspens*, but a few *Psuedotsugas* were seen and on rocky slopes *Pinus aristata* comes down close to the creek + river. The valleys are mainly Canadian zone but probably carry a trace of transition.

Cynomys gunnisoni are abundant and badger holes + *Thomomys* fossil mounds common.

Up Castilla R.

Aug. 19. Sam Elk killed a fine big coyote - apparently a Canis latrans, which had its stomach full of fresh mutton including wool & bones. The bones were well ground tho in pieces as big as peach pits. The lower intestines were full of feces that looked like clay but were really largely bone dust. There were sharp ticks on the coyote which was an old male in good condition & good red summer pelage. Before skinning I lifted & estimated his weight at 40 lbs. He was not fat.

We got a late start and followed up the Castilla valley mainly north for 10 or 12 miles to the wide part of the valley east of the Culbra Peak and nearly due north of Castilla Peak. The valley is open & park like all the way, varying from a mile to 5 or 6 miles wide between the strips of timber coming down the sides. The slopes above are not very steep & either heavily timbered or grassy & park like.

Aspens + piceas form the bulk of the timber but a few *Pseudotsugas* were seen + lots of *Pinus aristata* on all rocky slopes.

The valley is not over stocked. Grass is fine, there are no ranches except 2 or 3 little Mexican places. Most of the stock seen was a few herds of sheep.

Camped 100 or 200 feet above valley in a side park under an aspen grove.

Arrived at starting 118700, at camp 10300

A hard frost in morning, not in forenoon, cold + showery toward night.

Lots of people are camped in the upper end of Costilla Valley fishing.

Up Culbrea Mts.

Aug. 20 - Gant & I took our horses
+ rode up the trail to about timberline
then walked to crest of range and
followed around to top of highest peak
in the Culbreas, by some called
Castilla Peak, but not the Castilla
Peak of the maps. it is the southern
point of the Culbrea range where half
enclosed by the Castilla River.

Our aneroids read at camp mine
10700, Gants 10500 feet on starting &
they read on the peak ~~13~~ mine 13400 Gants
13650. This is the highest peak south
of Spanish Peaks until Wheeler Peak
rises 100 feet above it. By looking
across to Castilla Peak (generally known
here as Little Castilla, or Cuervo Peak)
we seem to be about 100 feet above it.

The Culbreas Mts. are a well defined
range by themselves, separated from
the Cimarrons by the Castilla & Grand
valleys. The Cabrestos are a small bunch
lying between the Castilla & Red Rivers
and belonging with the Taos Mts. if with
anything. From the peaks we had a grand
view of the Taos Mts, Cimarrons,

on the south, the Spanish Peaks & Sangre de Cristo on the north, the Raton ~~to~~ Sierra Grande away to the east, and endless numbers of craters over the plains to the west.

This southern end of the Sangre de Cuba range is a wide topped mass with usually one escarpment and broad slopes. You can ride all over the top, including the highest peaks, & over miles of grassy plain nearly 1000 feet above timberline. In fact they are so open & accessible that herds of sheep have swept them almost bare of vegetation. The peaks are long swells with stony & sodded surface. The escarpments are mainly N. & E. on this part of the range with little lakes & meadows at their base near timberline. In one place at 13300 a big snowbank still remains.

Streams & springs come out around the base of the peaks & at the present time rain pools fill the depressions over the upper slopes. The side slopes of the range are

thickly timbered except where burned off. in
Aspens form a large part of the Canadian
zone timber, *Pinus aristata* is abundant
in Hudsonian with *Picea engelmannii* &
Abies lasiocarpa (or *arizonica*), but it also
grows on exposed rocky or barren gravelly
soil lower down in the valley.

The whole set of alpine & Hudsonian zone
plants occurs on top of the range - same
as in the Texas Mts. but fire & sheep have
played the mischief with zone plants
as well as rare species.

See note book for list of plants on top.

If our aneroids are reading correctly
timberline is steadily increasing in height
to the north, being near 12600 on S.E.
slope and 12800 on S.W. as an extreme
limit. This may be due to error in
barometer readings or to increase of
base level. The big valley on the east
of the range lying from 9400 to 10700
feet & the San Louis valley on the west
at a high level.

Down to Beaver Camp

Aug. 21 - Followed down Costilla River to just above the narrows, a deep impassable canyon and camped at 9500 feet at a little spring creek in a side gulch, 100 feet above the river. A colony of beaver with several big dams & ponds & houses was the immediate cause of our camping. Came about 15 miles down the river and about 5 miles below the mouth of Comanche Creek & Gibraltar rock. All the way down beautiful valleys with grassy sides & bottoms but no settlements.

Began to strike traces of Transition zone at mouth of Comanche Creek on S.W. slopes and at our camp were fairly in Transition with yellow pines, flexilis, & douglas spruce over open S.W. slopes to 500 feet above us. Still *Pinus aristata* is abundant on rocky slopes with flexilis & ponderosa. I can't account for it unless this proves to be another form - possibly *belpuriana*.

To Castillo

Aug. 22+23. Remained at camp studying + photographing beaver.

Aug. 24 - Started down toward Castillo in P.M. Continued down the river a mile to mouth of Lata Creek, then up it a mile + over a high ridge to get around the Canyon - The Narrows - then down to the Castilla valley below the canyon where the good ranches are. Averoid at camp 9850, at mouth of Lata Cr. 9350, top of ridge 10300. River below canyon 9000, Camp a mile down valley 9000.

Upper Sonoran zone comes up to 9300 on S.W. slopes in canyon below the Narrows + is marked by nut pine both species of juniper, *Bigelovia*, *Artemisia tridentata*, *Helianthus annuus*, *Ribes leptanthum*, *Rhus aromatica*.

The little farms along the river valley raise good crops of hay, oats, wheat, corn, peas, + vegetables. They are all Mexicans + the adobe houses seen a part of the picturesque canyon. *Populus angustifolia* forms beautiful groves + strips of timber.

To Antonito.

Aug. 25. Followed down the Castilla canyon 8 miles to Castilla town, then west to Rio Grande and 3 miles beyond, where we made a dry camp on the plains between two lava buttes. Aneroid at camp 9050, at Castilla 8500, at Rio Grande 8100, at camp 8300. Came about 30 miles. Good road & mostly down grade.

Castilla is at the edge of the valley and is a typical Mexican settlement & town, spread out for 2 or 3 miles, with a plaza & store & church at each end of the settlement. Most or all of the water of the Castilla river is used for irrigation. Groves of *Populus angustifolia* beautify the valley but along the streams but otherwise it is a desert, sagebrush valley stretching west as far as the San Juan Mts. except for numerous craters & lava buttes which are black with nut pine, juniper & the higher ones with yellow pine & aspens.

The valley is level, mellow soiled & pure Upper Sonoran zone.

near the mouth of Castilla R. we passed through the little Mormon town of Eastdals, rather a nice settlement as far as we could judge in a pouring rain. Then on 7 miles farther west we crossed the Rio Grande Canyon - the very upper end of it, on a fine iron bridge of 3 spans from rim to rim, about 75 ft above the water. The canyon is cut through solid lava beds.

To the west lava buttes & craters form a series parallel with the river & we made a dry camp in a gap of this series 3 or 4 miles west of the river, close to the little flat topped black butte on which the Utes killed about 20 Cheyennes many years ago.

Sam Elk knew about it & asked a Mexican which butte it was & found it was the one closest to our camp.

The Cheyennes got drunk at a Mexican saloon at Castilla & started for the Ute camp on the Conchos to steal horses. They were discovered, chased back to this butte where they held this over for a good while but were finally overcome & all but

To Antonio

one killed. One was left to tell his people about it. Sun Elk remembers the scalp dance the Utes had to celebrate the event at the Taos Pueblo a short time after. & he sang the war song of the Cheyennes to us - those they sang up to their death. The Utes took the song with the scalps as the spoils of war & the Taos Indians learned it from the Utes. As Sun Elk sang it to us after dark in the tent, beating his breast like a drum, it had all the wild battle ring combined with the mournful death chant.

Aug. 24. Continued westward about 6 miles across gently sloping arid plains to the first ranches along the San Antonio Creek. Thence 6 or 7 miles across level plains among the ranches to Antonio. Then after getting supplies & a hotel dinner returned about 3 miles & camped on the open, level plain with good grass & a glorious view but no wood & only ditch water nearby.

Antonito

Aug. 24 to 30

Remained at our plains camp trapping for small stuff, but a hard rain every afternoon has hindered the trapping. However we have taken *Onychomys*, *Peromyscus sonoriensis*, *Mus musculus*, *Microtus agrestis*, *Perognathus*, *Perodipus montanus*, *Thomomys*, *Spermophilus 13lineatus*, *Zapus*, *Lepus campestris*.

There are lots of *Cynomys gunnisoni*, some badgers & coyotes in the valley.

The flat plain where we are camped is smooth & level with a carpet of short grama grass. In places there is a little *Bigelovia* & *Gutierrezia* & patches of cactus (*Opuntia polyacantha*).

The farms run along the stream & ditch courses & have lots of trees & meadows as well as good fields, but the mesquites are so thick in the woods we did not camp there.

To Alamosa & Del Norte

Aug. 30 - Took a 7 o'clock train for Alamosa & had to stay there over night. Stopped at the Victoria Hotel & found it excellent.

Aug. 31 - Took a 7 o'clock A.M. train for Del Norte & reached there at 9. Went to Windsor Hotel & then tramped over the hills till noon. In P.M. got a horse & buggy & drove up the valley 3 miles west & set traps for *Reithrodontomys*.

The Rio Grande Valley closes in about 25 or 30 miles above Del Norte but to that point it is a beautiful, wide, farming valley full of good farms, big ditches, fruit trees, & nice homes & towns.

Upper Sonoran zone covers the valley & well up the side slopes all around. Juniper & nut pine form a belt over the foothills upon below *Pinus ponderosa*.

Then the open valley is covered with *Begonia canescens* & *Artemisia*, *Gutierrezia*, *Atriplex canescens*.

Del Norte

Sarcobatus vermiculatus, *Opuntia*
polyantha, *Helianthus annuus*,
Helianthella, *Gudelia*, etc.
For lists see vol. book.

Sept. 1. Caught a lot of *Microtus*
aztecus, *Peromyscus sonoriensis*,
Eutamias quadri vittatus, a *Mus musculus*,
+ one *Rhithodontomys*. Saw several
Lepus pinctus, tracks of *Coyote*, lots
of *Cynomys gunnisoni*, + birds.
Returned to Alamosa in
evening + staid over night at the
Victoria Hotel

Sept. 2. Returned to Antonio + met the
boys coming in with the camp outfit
about 6 miles east of town. Got
supplies and followed up the Comijos
River about 10 miles west of Antonio
+ camped in the valley just before
it narrows up to a canyon.
To the north a lava escarpment rises 900
feet above the ~~to~~ valley + back of this
a fine double crater rises 700 feet
higher. The escarpment shows 10

successive strata of lava flows
from the top down to where the talus
hides them. - See photo - The sheets
are 20 to 50 feet thick & of a rough
basaltic formation. The ~~little~~ craters
above has a wide old rim & a
steep ~~cone~~ secondary cone in the
middle.



On the south side of the river valley
the slopes rise more gradually &
are covered with timber of
transition zone species and a few
Canadian species toward the tops.
Upper Sonoran zone covers the
warm slopes of the valley &
nut pine & juniper run to the top
of the lava escarpment.

Our camp on the river bottom at
8300 feet is close to the edge of
the cottonwood bottoms that follow
the river.

Sept. 5 - Started early for Antoinito where we got mail & supplies & then took the road for Tierra Amarilla. Crossed stony lava plain in a S. W. direction for 12 miles & camped on the San Antoinito creek at ~~west~~ base of San Antonio mountain at 8700 feet. The creek is in a lava canyon. We camped on top of lava plain.

San Antonio Peak is a great lava crater in the form of a dome but with no apparent concavity. The base is barren but the upper half on the west side & most of the east side is covered with aspens with here & there a strip of spruces or firs. I could not make out any pines. The aspens have been burned & strips of dead timber show here & there & roads run up to them. There are apparently no ranches or near the mountain & we could see no trace of water.

To The Tusas R.

Sept. 4 - Followed up the San Antonio Crude a few miles, then bore off to the S.W. up a long grassy valley & then south over a ridge covered with yellow pines, Douglas spruces, *Picea pungens*, *Abies concolor* + aspens. Then down into a long, open valley with good timber around the edges, then up over another ridge and down into the valley of the Tusas River & camped at the fork, a few miles above the P.O. of Tusas. The country is all transition zone and about half timbered & half open. The valleys are covered with woods & here & there patches of good grass, but sheep have gone over it like a fire. There are no ranches on our whole days trip except a few sheep camps along the Tusas. The country would be fine for stock if not overgrazed & ruined.

The yellow pines are said to be full of *Sciurus aberti* usually, but this year there are no pine or spruce cones in this region & we could find no trace of the squirrels.

To Hopewell

Sept. 7. Followed up a dry branch of
Tusas R. about 6 miles to Hopewell,
then turned north west and struck the
head waters of the Brazos in about
6 miles farther. Passed by half a mile
from the Brazos lakes & went a
mile beyond to head of a long, grassy
valley & camped near some springs.
 Aneroid at camp on Tusas R. 8450,
at Hopewell 9700, on summit 10100,
at camp 9800.

Mainly forested country with big
grassy park like valleys, a few small
creeks, lots of grassy springs.
Up to Hopewell the south slopes are
all Transition zone with yellow pine
& Douglas spruce, & *Abies concolor*,
but from about 9000 feet the N.E.
slopes are Canadian with aspens,
Picea engelmanni, & *Abies lasiocarpa*.
Below Hopewell the timber has been
mainly burned over, but on the
head waters of the Brazos are great
stretchers of *Picea engelmanni* & *Abies*
lasiocarpa forest that evidently could
not be burned & still stands black

beautiful with clean ground
beneath the symmetrical trees,
beautiful grassy parks and strips
where you expect every minute to
see elk or deer, but where you
see only horses and cattle.
One big flock of sheep ranges
north of our camp but the open
valley seems to be full of horses
& cattle - all fat & frisky.
The grass is excellent & not overgrazed.
The spring water is perfect.

Sept. 8 Took saddle horses & rode
south along the crest of the range for
several miles through beautiful park
& clean forest country, mainly above
10000 feet. Could see all over the Chama
& Tierra Anaiillo valleys & the big mts.
beyond to the S.W. - a magnificent
view over mesa, plateau, valley &
bold ranges - mainly a forested
country. Along the crest of the range
we were above aspens with only *Picea
muhlenbergii* & *Abies lasiocarpa*, the only
3 trees of our level.

Z. Tierra Amarilla

Sept. 9+10. Remained at camp, trapping
+ taking photos + writing reports.
Caught 14 *Microtus nevadensis* in the big
valley near camp. This is an addition
to the New Mexico list of mammals.

Sept. 11. Started for Tierra Amarilla.

Crossed summit of range 3 miles west
of camp, then came down rapidly
over very stony + bad road till
we reached the first benches at the
beaver pond - from there down
the roads were less steep + stony, but
still bad till we reached the bottom
of valley below the big cliffs, where
we began to travel rapidly over
good roads + nearly level country.
Camped near Ensenada about 3
miles before reaching Tierra Amarilla.

Aneroid at camp read 10000,
on summit 10500, at beaver pond
where we lunched 9700, upper edge of
Transition zone on W. slope 9100,
Camp 7700, Tierra Amarilla next
morning 7650.

The north side of the Brazos

Zierr Amaila

river is a canyon wall, the south side an open mountain slope. The road follows all the way down on the south side & we did not see the Brazos till we camped near its mouth. The north wall rises almost sheer ⁱⁿ over 2000 feet of granite cliff, equalling if it does not exceed El Capitan. Many of the Yosemite cliffs in beauty & grandeur. The wall is cut in two bold headlands standing out like El Capitan & Half Dome, with beautifully fluted vertical cleavage. There is none of the real dome structure or arched cleavage but the cliffs have been carved by ice just as those of the Yosemite have.

On the way down we passed a little tule lake & out in the middle near open water found a fine old beaver house. It has long been abandoned & the top has been burned off but the mud around it is strewed with sticks cut by the beaver not many years ago. There were numerous other little meadows.

Transition zone begins at 9000 feet on west slopes & is marked by an unusually fine growth of yellow pine where it has not been cut for lumber, as it has along the bottom 5 miles up from Tierra Amarilla. The old ~~stump~~ ~~shows~~ marks the side of what has been an unusually good forest. *Quercus gambeli* & also fills transition zone & grows in extensive thickets over the slopes & ridges. *Populus angustifolia* extends up the streams to 8000 feet.

Along this side of the valley there seems to be little trace of Upper Sonoran zone. *Helianthus annuus* in the fields is almost the only representative plant.

There are no nut pines or junipers. Yellow pine strips extend out into the sagebrush valley on rocky ridges. The crops are mainly oats, wheat, peas, hay, & garden vegetables. Fruit is shipped in from the railroad or packed up from Espanola.

To Boulder Lake

Sept. 14, Got mail & grub at Tierra Amarilla and started west for Boulder Lake (or Rock Lake as usually called) on the ~~the~~ Jicarilla Reservation. The Indians have their annual "fiesta" there tomorrow & as the agent will be there it is my simplest way to report to him for work on the reservation.

From Tierra Amarilla we cross about 2 miles of sagebrush valley before striking the Chama River. Then we soon strike into open yellow pine woods which continue 10 miles farther to where we strike the Chama River again near the saw mill where a mixture of Nut pine & juniper covers south slopes. Filled our keg at the river & then followed up a half dry, alkali incrustated arroyo 10 miles farther to Boulder Lake & camped. Aneroid at Tierra Amarilla read 7500, at the Chama R. 7200 and at the river near the sawmill 6950. At Camp near Boulder Lake 7300.

Most of the country is yellow pine transition with open sagebrush valleys between ridges.

Water & vegetation are scarce & poor. The country has been shepherded to death, but there is lots of good yellow pine timber.

Upper Sonoran zone comes in on south slopes all along the Chama River valley but not far back except to the west where nut pine & juniper cover hot slopes close to Boulder Lake. The rock is mainly sandstone which cuts out in flat topped mesas with sharp cliffs & steep slopes of talus. Coal crops out here & there between layers of shale.

Grass is good in places west of the Chama river but there are too many chaps which keep the ground bare over much of the country. No good water.

Lots of *Cynomys gunnisoni*, *Thomomys* & *Citellus grammurus*. a few *Eutamias* & numerous migrating birds.

Boulder Lake is a shallow pond of saturated(?) alkaline solution a mile long. The shores are wide & flat & muddy & look like snow.

Sept. 15. Jicarilla Fiesta

Near Boulder Lake we found about 1000 Indians camped for their annual fiesta - namely Jicarilla Apaches with a few visiting Navajos, Utes, Santa Clara & San Ildefonso. The camp is scattered over half a mile of ridges & surrounding the racing & dancing ground & probably includes 100 tipis of all styles from the little one sided shade wigwags to the



tall



tipis with smoke hole & flap at the top.

F. counted 71 tipis from one point & could not see nearly all.

This is the main day but the Indians have been dancing for 2 days past & it lasts all together about 4 days. On a tour of inspection at 9 A.M. among the tipis we found the Indians eating their breakfasts of boiled mutton or goat meat bread & melons or dressing & painting for the dances & races. At about 10 the chicken runs began

+ the chicken served answered the purpose
of a foot ball, the players being on
horseback. The chicken was pulled & hauled
~~until~~ used for a quint till it looked
like an old dog. One horseman kept it
until the others could get it away from
him & they were often mixed in a heap of
15 or 20 men & horses fighting over the
dead chicken. This lasted half an hour,
then the dancers began, the racers
dancing from one end of the track
to the other past each other. Then
the racers began, a relay of about
20 men on a side on a track I
should say 300 yards long. The
running, starting, whipping
& all was similar to that of the Texas
racers but an additional feature was
men along the sides with pistols & Winchester
shooting blank cartridges to hurry
the runners. There were many good
runners & some poor. Most of the
men were finely built with narrow
 chests & muscles & some were Apaches
in form. The gee string & paint &
eagle down formed part of the dress.

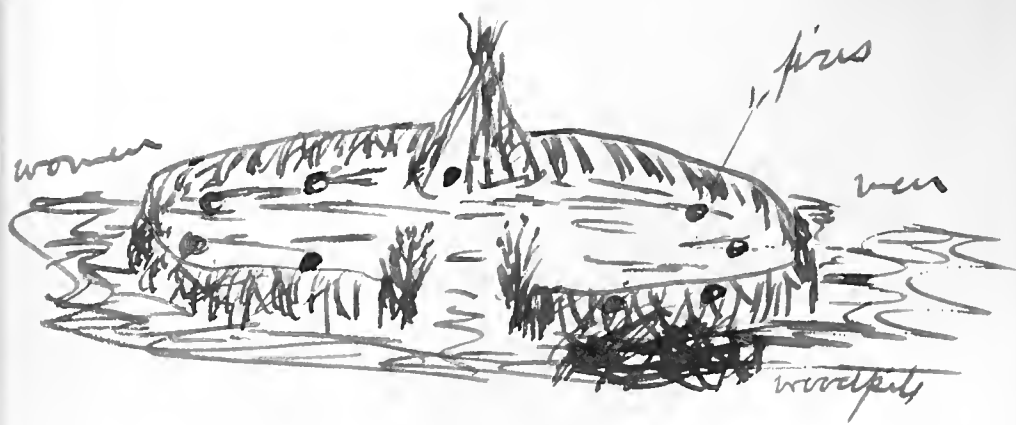
Black & buff & white were favorite body colors brightened up by face paint of diamond dyes & bright neckerchiefs or head dress & feathers. All ran barefooted. After the race they danced again & at 2 P.M. disbanded for lunch. During the last dance bread & apples were showered over the dancers by the squaws from horseback.

The squaws, gorgeously dressed, were well mounted & fairly good riders were a spectacular feature of the day. The small children were usually held in a shawl on the front or back end of the saddle or sometimes on both ends.

Some little races & dances took up the afternoon & the Big Medicine Dance was prepared for.

The Medicine dance was to begin in the evening but did not really begin till 11:30. It lasted till 3 P.M. or nearly daylight. It was in the big circular like circle surrounding the Medicine Tapes.

This circle 100 feet across, was made of 'nut pine boughs set



up each way against a top rail forming an inclosure about 6 to 7 feet high & thick enough to support most of the wind. At the far end of the corral opposite the gateway the big tapes, 20 feet wide & 20 feet high held the singers & drummers & as many people as could sit around the sides including 4 squaws on the side opposite the ~~women's~~ side of the corral. A fire in the tapes & 8 around the edges of the circle kept all light & warm, & were constantly replenished from a big pile of pitching rot pine wood outside.

The men came in early & sat or lay or stood around the fires till time to begin. The squaws came in & sat around the fires on the left side till the music got to their toes & then went out & danced in groups alone. The music ceased to be nearly by 4 or 6 old men at the far end of the tent sitting on the ground, singing & drumming on some dull sounding drum & rattling in the bells. The music was a chant, as weird and strange

as the whole seems, but it went to
your toes as effectually as that of
a good orchestra - In trying to
write it I got a queer medley.

Hä hi hi' ha hi' ya ya

Hä hi hä' hä hä' ya ya

Ah ah ah' ah ah' ah ah - guttural

Hi ii' ii' ii' high falsetto

• so on with frequent changes
+ an occasional pause when
the rattle lead. The time was
perfect + formed an even
beat for the 6 steps front, 6
steps back of the dancers who
stood facing 2 squares + 2
bucks as close as they could
without stepping on each others
toes. In one squad the bucks
placed a hand on the forehead of
the his partner, or sometimes both
hands, but usually they

danced without touching - back +
forward - back + forward like the
waves of the sea - a rhythmic
swing. Probably 20 sets of 4 each
(107 only 2) were dancing in the
corral at once + starting at
different times the motions were also
a medley - crossing irregularly.

The girls choose partners + two
rushers go after + drag them from
the crowd in ones or twos as the
girls signify who they want. The
chosen bucks hang back + go lame
+ try to escape but are yanked
along + placed in front of the ones
who chose them. The girls act
embarrassed + cover their faces with
their hands + the boys look sheepish till
they get fairly warmed up to the dance.
Some are awkward + others graceful
+ easy. The men wrapped to their
noses in gay blankets, hats on,
bells jingling from their leggins
+ only fringed moccasins showing
below, the women wrapped in gorgeous
shawls held gracefully around their

make a beautiful as well as graceful picture in the yellow firelight under a canopy of blue, smoke flame warmed smoke.

We ~~staid~~ for 2 hours & then went to camp & left them to dance out the night. We were the only white spectators - The few Mexicans were there to sell fruit, having come with wagons or burros packs from Espanola & the San Juan River valley. I noticed Utes & San Ildefonso & Santa Clara Pueblos in the audience but only the picanillos danced.

Sept. 14 - Hunted & worked till noon, then loaded up & started for Lake Tafoara - 7 miles due west. Followed up easy slope through yellow pine forest about 4 miles, over a low ^{ridge} then down an easy grade about 3 miles to the lake. The barometer at starting read 7550 and at Lake Tafoara the same but in going over the low ridge I did not realize that we were crossing the Continental Divide & did not read the

the barometer. It was not more than 200 or 300 feet above the lake. The whole trip was through beautiful open yellow pine forest with grassy parks, long ridges & streamless valleys but no water. Juniper & nut pine grow on south slopes all the way except over the highest part of the divide.

Artemisia arbuscula is abundant in the parks near the divide and a patch of *A. cana* grows in a park a mile east of Lake La Jara. *Artemisia tridentata* is common in places & *frigida* all across.

Lake La Jara is an alkalie pond $\frac{1}{4}$ of a mile long & 15 feet deep. A big dam 30 feet high has been built across the lower end to make a reservoir of the lake. Lots of ducks & geese & coots & snipe on the lake. The forest is full of fine lumber trees & ought to be put in good shape for harvesting the ripe timbers & dead trees.

Sept. 17, Remained at the lakes shooting ducks & other birds. Migration is in full blast & many species of ducks & snipe are here, but I was surprised to find a brood of downy young of the Ruddy duck & another brood that could not fly.

At noon the horses came into camp silently & foot loose - the bell & hobble having been stolen while they were out feeding. Fearing this was only an unsuccessful attempt to run off the horses we thought best to move camp to a place where we could picket them near us, so filled our keg at the shallow lake, where the muddy water was less alkaline than at the deeper lake & came back a mile or two on the road we had come & camped in a park of the yellow pine woods. Gramma & other short grass is abundant. The woods are beautiful & an undescrined species of chipmunk lives around camp. Found a well of fairly drinkable alkalie water half a mile from camp.

Sept. 18 Sunday - Remained at camp
and did ~~some~~ writing & hunting.

Sept. 19 - Started for Dulce and again
passing the lakes turned north &
crossing several low ridges up &
down easy grades through beautiful
yellow pine forest finally came into
a long draw & followed down it to
Dulce, for the last 3 or 4 miles
mainly in the Upper Sonoran zone.

Averaged at camp near 7500, at the lakes
7425, and at Dulce 7000.

While the whole country is mainly
Transition zone the south slopes are
generally covered with nut pine &
juniper, especially if steep & rocky.
The open valley around Dulce is
mainly Upper Sonoran, covered
with sagebrush & *Sarcobatus* & a little
grass on the flat part that is fenced
in. Outside the sheep & goats have
cleared off most of the vegetation from
valley & bare sides hills. Some juniper
& nut pine is scattered over the
south slopes & yellow pines come lower

to edge of valley on N.E. slopes.
A dry creek bed runs through the valley but there is no water, no irrigation, no farming. A Mexican - Mr. Gomez - has a big herd of sheep & a fine ranch in the best of the valley 2 miles from Dulce - south.

A few Indian teepees are located in dry corners of the valley near Dulce and following down the dry draw we passed a dozen or so empty little one room log houses with usually a brush tower over the doorway. A few loads of Indians were seen returning from the dance, but few had returned to their houses. None of their places had fields or even pastures near. The only water was in wells or holes dug in the draw, usually at a long distance from the houses.

A few horses were seen along the draw. The grass is fairly good most of the way at a distance of 3 or 4 miles from water. Sheep have cleaned it all off near water places.

Dulce to

Sept. 21. Packed & shipped specimens
& sent reports & left Dulce at 3 P.M.
for Horse Lake. Went about 7 or 8 miles
and camped under yellow pines with
good grass for the horses and
a pool of alkalie water not far
away. Camp up hill all the way
with easy grade but poor road.
Anemoid at Dulce read 6900 which
is approximately correct, at camp
it read 7400.

Followed open valley most of way
but yellow pine covers the ridges on
both sides. Sheep have eaten the
country bare for the first 5 or 6 miles,
then a little grass is found & at our
camp fine grama grass covers
the ridges. Pools of alkalie water
stand holes along the gulches
but no running water or good water
was seen.

The country is mainly Transition
Zone with lots of good pine timber.
Nut pine & juniper ascend but
slopes at lower end of valley.
Pseudotsuga is in cold gulches.

Sept. 22 Camp to Horse Lake

Arrived at camp read 7600 and at Horse Lake 7800, 5 or 6 miles, + mainly up gentle grade through open valleys + parks. Yellow pine + oaks etc on ridges.

Apparently Horse Lake is on the continental divide with about 15 feet elevation on each side of it. It is in a break of the ridge which runs 200 to 500 feet higher. A big open valley with excellent grass opens out on the North + west sides of the lake. Lots of Indians are camped in the valley in tipis + their herds of horses are running in the valley. Water stands in tanks from late rains + is good.

The lake is half a mile long + quarter of a mile wide. The water is a few inches to a foot deep, or probably deeper in the two ends. It has been 6 or 8 feet deeper within a few years + the lake twice its present size. The water is very alkaline + scarcely drinkable for horses. The shores are flat with few trees. Lots of ducks + geese + birds on the lake.

Horse Lake to Chama River.

Sept. 23 - Rained hard in forenoon so we did not break camp as we intended. Instead took a horseback trip around the valley & over the high ridges & through the timbered gulches. Found lots of aspen groves & dense thickets of choke-cherry, oak & *Pseudotsuga*. The mts. to the N.E. begin to show fresh white caps & it seemed cold & sharp after the rain.

Sept. 24 - Started at 9:30 for the Chama River near the saw mill & reached it at 1. Arrived at camp 7800 at river 6850. Came most of the way through beautiful open yellow pine wood & grassy parks, but for the last 3 or 4 miles through mainly juniper & nut pine ridges with the ground eaten bare by sheep. The late rain has filled pools all along but left the woods muddy & slippery. The Chama river is high & muddy, but we got a lot of good rainwater from rock pools. Camped under *Populus angustifolia* on river bottoms a mile above the mill.

To Stinking Lake

Sept. 25 - Found it was Sunday but had to go in to Tierra Blanca for supplies & a new man. This took most of the day.

Sept. 26 - Hunted up in the canyon in forenoon without much success. Packed up in P.M. & drove down to El Vado, then west to Stinking Spring Lake, about 7 or 8 miles. Aneroid at camp read 7200 on starting which was 400 feet higher than usual. The same at El Vado + 7700 at Stinking Lake. The lake is probably not over 7500 feet.

Like Boulder + Horse lakes it is merely a basin in the summit of the divide. The rim east of the lake is probably ¹⁵ feet above its level, that to the west ~~a little~~ ^{several hundred feet} higher. There are at least 3 outlying ponds beside the main lake + some of these are deep + permanent, with trees around shore. The main lake is probably 4 miles long, crooked + dividing in 3 nearly separated bodies.

Great numbers of coots & ducks are living quietly in the lake & there are young Ruddy's & half grown coots & I think immature red heads. The tule borders offer good breeding grounds for ducks, coots, rails, marsh wrens & redwing blackbirds, all of which are common.

The water in the small lake near our camp is up to my neck just out of the tules & I don't know how much deeper out in the middle. The bottom is covered with wild celery which the coots & redheads are constantly feeding on, diving for it or picking it from the floating mats on the surface that have been brought up. Their stomachs contain little else.

The red heads are delicious but the coots, tho' fat, are still flavored more with coot than celery. They are fairly good but still rank.

The water is very cold - my last swim, Oct. 3, for a red head out as far as I could kill it with the shot gun was in water close to 32°, after hard frosts.

~~Sept. 30~~

~~Oct. 30~~

Sept

Stinking Lake

Oct. 30 - Took a horse & went 8 or 10 miles west of the lake but did not reach the divide - Came back over one of the highest ridges where I could see over the whole western part of the reservation. The top of this ridge was 7900 feet and I could see nothing much higher in any direction in the Reservation. The Mts. to the north, in Colorado are getting solid white with snow & look cold.

That pines & junipers run nearly to the tops of ridges on both slopes, so there is a pretty complete mixture of Upper Sonoran & Transition zones. This is also shown by *Perodipus*, *Perognathus*, *Oryzoborus* & *Lepus texianus* at the lake. Still the dominant species are Transition over the reservation. The yellow pine timber is not so good to the west as farther north.

Came back around the south end of the lake, & saw 5 Canada geese in one of the arms. Several apparently deep arms of the lake at the south end are full of red heads & coots & other ducks.

To El Vado + south

Oct. 3. - Broke camp at Stinking Lake + came down to El Vado, got mail + supplies + then started south for Gallinas Mts. For about 10 miles we traveled over barren, sheep eaten sagebrush valley with no water, no grass, + almost no live vegetation. The escarpment to the west is covered with timber + in one place we crossed a gulch + went ^{up} ridge only to come back into the valley of another dry wash. About sundown we found a muddy rain pool + watered the horses + filled our keg + went on a mile or two to the first good grass we have seen ~~there~~ since leaving El Vado + camped at the west base of a pine covered peak, called on the old land office map Gallinas Peak. We were just on the edge of the sheep range with a big flock half a mile back of us. But the grama grass is tall + thick + good. Aneroid at El Vado read 7000 feet, at camp 7200, but only 7100 the next morning.

To Gallinas.

Oct. 4 - Traveled all day in a southerly course over rough roads and reached Gallinas town at sundown - Camped near town - came about 20 miles. Followed valleys between tilted mesas with most of the way with an escarpment cliff of sandstone on our right varying from 500 to 1000 feet high & long timbered slopes running up to the left and forming the same kind of escarpment wall to the Clama River farther east. The whole country is in layers of sandstone, gumbo, shale, etc. - tilted up to the east. The breaks make narrow valleys where the softer strata have disappeared. Generally the soil is sandy, but in places it is gumbo. There was good grass all along, no sheep, & little stock of any kind. No water except in rain pools & a few springs or two until we reached a big arroyo about half way where a little water was running in places on the broad sandy bed. We lunched

here. The grass is big & untouched
tho a few cattle were seen & a few
littl Mexican jacals were seen along
the arroyo. Most of our road
was through sagebrush valleys
ranging from 7000 to 7500 feet
in altitude, but in one place, a
mile or two after starting we crossed
a beautiful yellow pine ridge & in
several places we traveled through
juniper & nut pine country. We
could see Douglas spruce along the
cold sides of the escarpment &
extensive yellow pine forests covered
the ridges on both sides of us.
I should say half the country is
yellow pine transition, the other half
nut pine & sagebrush Upper Sonoran.
Am trying to wrap the zones &
trees in the land office map but
find the map gives little idea of the
country.

Gallinas town is a Mexican settlement
of a half dozen little adobe houses
& the store & P.O. are in another little
adobe half a mile beyond. The few little fields
of grain would not make good crops.

To Rio Puerco & Gallinas Mts.

Oct. 5.

Found that we could not follow up the Gallinas River, a tiny sandy hollowed creek of red water; but had to keep around the east side of the mts. to the south end of the range. Passed through Capulin, another little Mexican settlement & cluster of half a dozen adobes. Then over to Coyote Creek & across the Puerco River and camped at sundown at the south end of the main range. Another and apparently higher & partly detached range to the south seems to have no name unless it is called a part of the Gallinas. The main range around which we circled, is called on the old land office map the Mesa Prieta & is really like a great rounded mesa. There is no peak & it is covered densely with timber, spruce pines & aspens. Now the aspens are bright yellow & give their color to fully half the surface of the mountains, mixed in with the black spruces.

The base of the range is all yellow pine forest, open, clean, grassy, & beautiful. Our road for 20 miles along the east side is mainly through this virgin forest, which strange to see is scarcely mutilated by man. Even fire has done little to harm it. The trees are thrifty, large, clean and beautiful. It compares well with the San Francisco Mtn. forest before the mills were started. and it covers an extensive area. The plateau east of the Gallinas River is also apparently well forested, while the valleys & canyons are covered with nut pine & juniper. There are lots of open, grassy parks but no water for long distances & little stock. Almost no sheep. In places the young pines are coming in in abundance.

We found a small settlement on Coyote Creek, but crossed the Puerco in the canyon above ranches.

Gallinas Mts.

Oct. 9 - Rained all night & in morning the top of the mts. above us showed a white blanket - Started early for the top & tramped all day, reaching the highest part of the flat topped Mesa Prieta at 10400 feet or the highest part I could find. Five miles farther N.W. they seem to be a little higher. A good trail of snow covered all the open spaces on top but we did not reach the ground under thick spruces. The forest over the sides of the mts. is open, that on top is mainly dense fir & spruce & aspen. The top is nearly level with rich soil, but there is no little grass or undergrowth that efforts to burn off the timber have not been entirely successful. The trees are largely *Picea engelmannii* & *Abies lasiocarpa* with aspens mixed in. The sides of the mts are also covered with rich mellow soil that yields good grass in the open & fine, thrifty trees when not burnt.

Found no signs of game

except one lynx that I nearly stepped
on in the thickest of the top woods.
There is no water on top, the
streams coming out vainly at
9500 to 10000 feet. Found a fine
large creek on the west slope &
followed down it to 9000 feet, then
around to camp over the low
gap where the road crosses
between this range & the southern
extension of the Mts. at 9300 feet.
Got a Sciurus aberti whop -
& a Cynomys gunisoni & a lot of
birds but saw no trace of big
game - deer, bear, or turkeys.

There is no mast this year in
the mts. except a very few acorns
& if there was any game but it
had left to hunt food. In the
morning while out for the horses
near camp two large blacktail does
came across the open gulch &
then walked past within 5 or 6 rods
of camp & went down the Puerco
canyon, probably going down for
better range.

Gallinas Mts.

Oct. 10. Crossed the Coyote Creek Canyon & followed up the east fork of Coyote Cr. to near its head on the big ridge that is a southern extension of the Mts. we are in & probably should stand as a part of the Gallinas range. No one seems to know any name for it, but the "pebitants" say "all same Gallinas." It is the best part of the range, being on a level with the mts. N.W. of us - 10400 approximately. More streams rise in this ridge & the top is beautiful park & spruce country with meadows & little lakes, but it is easily accessible to the sheep ranches all round and is eaten off bare & clean. Even the woods are so shaped out as to present bare ground & bare trunks. The timber has been burnt off as far as possible, but fortunately the yellow pines stand burning pretty well & have not been injured much while much of the higher spruce forest will not burn. This leaves

much of the forest in good condition.
The soil is good & not much of it
weedy so and grass would be
knee high if left for a season.
~~Saw~~ To the S.W. ^{about 15 or 20 miles} a large dome
shaped Mtn. rises high enough to
have a N.E. timberline bald spot,
probably reaching 12000 feet. It seems
to be connected with this ridge &
is covered with black forest as
is also a big ridge sweeping
around to the west of Mesa Prieta.
Still west of this a high, forested
ridge runs N. & S. & is probably
the Cijita Blanca.

The whole country offers a magnificent
area for forest reserve, better & more
extensive than I had supposed.

Even the canyons of the Puerco &
Coyote are full, except along the walls,
of magnificent yellow pine & Douglas spruce.
The trees often 5 feet in diameter & 100
feet high with as perfect trunks
as I ever saw. The mesas are
almost pure yellow pine. The tops
of the mts. are Canadian zone.

but well worth saving for the snow
they hold + distribute in numerous
streams on all sides. There
is abundance of water, fine
soil, + good timber if the country
is ever developed beyond what
the lazy Mexican squatters on the
few naturally fertile + easily irrigable
patches along the creeks care to do.
If sheep could be controlled + the
lumber company that is working
its way south from El Paso
could be headed off this would
be a Paradise - If not it will
soon be a barren, unfruitful
form of Hades. If it could
be rescued soon there is game
enough to restock + make as
good a game + trout region
as there is out doors, but now
the game is scarce.

I saw a few Turkey signs in the canyon
+ shot 2 blue grouse on top of the ridge
but saw no signs of deer or bear.
Could not resist getting out my bow
+ line + in a few minutes caught 10 fine trout
near the head of Coyote Cr.

to Coyote

Oct. 14: Broke camp at 2 P.M. & came back across the Puerco canyon and down to near Coyote & camped by rain pool. Had fairly good roads & mostly down hill. Came about 12 miles Aneroid at camp 8500, at Coyote camp 7000 feet. Most of the way through juniper & nut pine country. The bottom of Coyote Creek valley is narrow & rather barren except for the little Mexican ranches along the flat spots. Lots of water goes to waste and much more land could be irrigated & made valuable.

At one ranch we stopped for grain but could get only wheat or corn. We took the wheat & bought some very good apples.

Did not camp till dark so could not set re-traps.

Found lots of *Opuntia arborescens*, & 2 flat species of *Opuntia*, *Artemisia parryana* & a little *Stemmatococcus* & other Upper Sonoran plants in canyon.

Chama Canyon

Oct. 12 - Started early & came across to Campone Cr., then down it to Chama River and down it to about 5 miles above Abiquiu, where we camped in the canyon. The road is washed out in many places & we had to stop & build new grades in & out of the gulches in several places. Some sandy strips were heavy and travelling was slow. Were surprised to find an old railroad grade down through the Chama Canyon. It has been washed out in many places & filled with boulders from above in others. A man told us it was built in 1880. The ^{wagon} road was also washed out in places but had been partly repaired. Found no grass for our horses as the canyon has been shaped out.

Camp in morning 7100, Chama River 6150 - Camp 6150.

The Chama canyon is narrow & so far uninhabited.

Abiquiu.

~~Oct~~ 13. Soon after leaving camp we came out to a wider part of the valley where rancharos begin & a few placer washings are located. Then crossed the river and followed a ranch country to Abiquiu, to which we descended, then down the open river valley about 10 miles and camped on a wide, sandy slope of the valley by a rain pool. Remained here a day & a half collecting & writing reports.

Below the Chama Canyon the soil is very sandy. The roads deep & soft. Sand blows into great dunes & drifts and the broad side washes are beds of sand & stones. The bordering hills & cliffs are mainly sandstone or drift or barren badland formations.

All but the valley bottom & much of it is covered with wet pine and juniperus monosperma. The blue juniper (placida?) has disappeared. When not eaten here the valley

yields good grama grass
and such Upper Sonoran plants as
Lycium pallidum, *Sarcobatus*, *Atriplex*
canescens, *Forestiera neomexicana*?
Eugubrusk & *Bigelovias* with great
abundance of *Opuntia arborescens*,
O. engelmannii no. 911, *O. polycantha*?
and *Yucca glauca*.

The little Mexican ranches along the
river bottoms include only the patches
easily put under irrigation. The high
water has recently washed out many
of the fields & covered corn & alfalfa
with sand. The Chama river bed is
so wide & flat & sandy there is little
hope of forming reservoirs here, but
swampy ones could be made in
the canyon above. A good deal of
adobe soil crops out in places &
could be used for ditch & reservoir
lining.

At Abiquiu Mr. Grant who has
the store took us into his orchard
where some of the most luscious peaches
& apples ~~was~~ never seen were still on the
trees. His grapes & plums had all been gathered,
but he has proved what this soil & climate can do.

To Esparola

Oct. 15 - Started at noon & traveled slowly down the valley through deep sand. Occasionally we would strike hard ground & good road for a little way across a clay point, but in every gap the sand has blown into the valley or washed down or drifted up from the river bed till the roads are very bad.

Very few ranches were seen until near the mouth of the Chama where they are all along the river flats - little Mexican or Indian patches & gardens and orchards. The adobe houses are now gay with strings of chili & piles of corn & squashes adorn the house tops & door yards. Little stacks of alfalfa & corn stalks cap the barns or sheds, but all is on the smallest scale of poverty, mettle to mouth living. Some day this part of the Rio Grande valley will be a rich & closely cultivated region.

Camped at the ranch of Francisco R. Cervera 3 miles above Esparola who proved to be an uncle of our camp man, ~~Jose~~ Fernandez.

Espanola

Oct. 16. Sunday morning.

Waited till noon to read & write letters, then drove down to Espanola and 2 miles below to the Santa Clara Pueblo & camped just above the Pueblo on Santa Clara Cr. Saw Mr. Fros. S. Bogies at the Pueblo, but can do nothing about storing outfit till tomorrow.

Gaut set a lot of traps.

The Santa Clara Pueblo is too civilized for much interest. The houses are mainly one, or a few 2 stories high, with doors & windows & in general not very different from the Mexican adobes. The people are bright with pleasant faces, but less picturesque than the Taos. Some dress in white man's clothes & I think many are mixed with Mexican.

Mr. Bogie's wife is a Santa Clara.

Mrs. True, the teacher says the average expenditure of the Santa Claras per capita per year is \$25. She has taken a careful census for two years with practically the same result.

Espanola

Oct. 17 - Went across river to see about wintering horses but to no purpose - A cold night with ice on water in morning.

Oct. 18 - Broke camp & went into town and staid with Mr. Stafford. Stored outfit in his shop and arranged to have him take horses to Colorado for winter.

Oct. 19 Packed up & left Espanola at 4 P.M. & reached Santa Fe at 6. Was surprised to find pine grass between the Rio Grande & Santa Fe and juniper & nut pine country all the way. Saw wounds & holes of *Sipodromys spectabilis* halfway from River to Santa Fe. Got supper at Palace Hotel & took 9 P.M. train for Lamy, arriving at 10:30. Mrs. Bailey took seat bound train at 12:30 & I had to stay over till morning for train to Albuquerque. All trains are late on account of wash outs from late rains.

To Albuquerque

Oct. 20. Found the country around
farming nut pine & juniper hills,
rather barren. A little to the west
the middle of the valley opens out
& is grassy or barren. At the
little town of Cerrillos we are near
the north end of the Tuzito Mts. which
are steep peaks nearly as high as
the Sandias with tall timber of
some kind over their tops.

A trip from Espanola down to
Cerrillos, then into the Tuzito Mts.,
then to the Sandias & Mangas
is worth making.

At the Rio Grande we strike the
pueblos & farming country all
along. Lots of fields of alfalfa are
just being cut but most other
crops are gathered. The cottonwoods
along the Rio Grande bottoms are a
golden belt. Large ponds of
overflow water stand on the
low parts of the river flats & ducks
are thick on some of these.

Reached Albuquerque at 1:30 P.M.
& have to wait till 2 A.M. for train to El Paso.

To El Paso

Oct. 21, Left Albuquerque at 4 A.M.
with a hard frost on the grass & ice
on shallow ponds. A little scattered
mesquite is the only trees of Lower Sonora.
Just upon reaching Pecos the first
patches of Larrea were seen on south
slopes of a black lava mesa & some
Baccharis in side gulches of valley & a
few bushes of Prosopis pubescens.

At Socorro Larrea becomes common on over
black mesas both mesquites large & common
on flats. Rhus microphylla and Ephedra
triplicate: common & Baccharis abundant
& here all along to San Marcial.

The San Mateo Mts. west of San Marcial
are high with yellow aspens over the
top. A patch of aspens also appears on
old Baldy of the Magdalena. The
Pecos Mts. are low & bare. The
Bosque Range is too far to the S.W. to
show more than a heavy black ridge.
The near by La Orotuna are
a low, bare ridge without timber.
Yucca radiosa grows over this top.
The Caballos are another low, bare
range without timber.

The San Andres on the east are mainly barren but black patches of timber (apparently nut pine & firs) appear on this higher parts.

The mesa is a grassy plain with numerous lakes in the depression at present. *Yucca radiosa* is scattered all over it & some of the thick leaved *baeata*, or form of it, is seen. *Taraxacum* is common in places but nowhere on north slopes & mainly on black lava soil.

Engle is a little town on the plain with stores, saloons & hotel.

Back to Rio Grande at Rincon where a decided change from the valley above is noted. The cottonwoods have not begun to show yellow. There seems to have been no frost. Alfalfa & all vegetation is fresh & green. Lower Sonoran plants exclude all others. Apples still hang on the trees at Las Cuevas & Mesilla Park. Reached El Paso at 7 P.M. A beautiful ~~soft~~, warm, moonlight evening with a southern softness.

El Paso

Oct. 22 - Went to the 416 McGoffin Ave where Mrs. Holm used to keep the nicest boarding house in El Paso but found it had been sold to Capt. Bell, who has a good Chinaman to run the house, so staid with them. Spent most of the day getting supplies for present & next years traps.

Oct. 23 - Sunday - Finished back reports & took evening train for Valentine, arriving at 1 P.M.

Oct. 24. In forenoon tramped over plain & took photos of *Yucca radiosa* & *macrocarpa*. One of the latter has 5 fairly complete nests of *Corvus cryptoleucus* & traces of 3 older ones, the other has no fresh nests but traces of fully a dozen old ones between the whorls of leaves.

Longspurs & Antitars are common in large flocks mixed. Had only rifle so could not shoot longspurs but found feathers by post where hawk had eaten one Antitars.

Saw Otis Finley & talked bears with him.

To San Antonio

Oct. 25. Left Valentin at 7:30 A.M. + reached San Antonio at 11 P.M.
Snowing when we started + at Alpine there was 3 inches of snow on the ground + rapidly falling. At Minhton no snow but raining.

Vegetation unusually rank + thick abundance of grass all along.
Many flowers out from the late rains
Fouquieria having out.

Oct. 26 - Found athletes at the state fair at San Antonio + learned that 2 of the days were given to bull wrestling + bird talks so decided to stay.

Oct. 27 - Went up to Austin + spent the day in University + State libraries looking over early Texas literature.

Oct. 28 - Returned to San Antonio + attended bull wrestling convention.

Oct. 29. Read in Carnegie Library in forenoon - attended farmers convention in P.M. for bird talk.

Nov. 20. Left Eagle Lake at 4:30 P.M. + reached Liberty at 8:45. The country is almost entirely prairie to Richmond, + sparsely settled. Great stretches of prairie are untouched + unimproved.
Cypress are common along East Comanche Creek.

Nov. 21. Drove over to Blair's Mill, 4 miles N.W. of Liberty, where I found Bray.
Hunted in woods part of day.

Nov. 22 - Drove N.W. about 16 miles to Mrs. Carter's farm on west side of Tarkington prairie and in afternoon went hunting cats with the boys.
Mounds are numerous both in woods + across prairie.

Nov. 23 - Hunted from before daylight till after dark but did not get much.
Caught one coon in morning.

Nov. 24 - Went to Cleveland in P.M. with Prof. Bray. Got camp supplies + returned.

Nov. 25 - Fixed up outfit for a camp trip - took a few photos.

Nov. 26. Left Mr. Ab Carters place at 9 A.M. and crossed Zackington Prairie and continued east through heavy timber to Golors Lake near the Trinity River. Camped at lake near widest place & hunted & set traps till dark. Pine & hardwood timber covers the sandy land between prairie & river bottoms, hardwood & cypress covers the black land bottoms.

Both sets of timber are dense & tall and full of magnificent trees.

Half way through the pine timber I found 2 ivory billed woodpeckers bounding & calling near the top of tall dead pines & shot the male - saw one other but it escaped. At sundown near our camp I found 3 on a tall dead cow oak which has a large hole about 60 feet up where they evidently intended to roost.

I shot one & the other two left but were on the tree again at daylight the next morning.

Nov. 27. Caught nothing, but saw 2 of the ivory bills again. They were wild & I could not get a shot.

Their voice is a loud nasal ank, ank, ank, that at a distance sounds like a nuthatch close by.

Skinned the ivory bills & a wood duck & started for Baton. Crossed the river at a ferry about 3 miles below the lake, then struck due east through more open timber & across Baton Prairie. Camped a mile out of town.

Nov. 28. Went through Baton, a new dirty oil camp & east to Escatoga another quacking oil town in the woods. The north about 5 miles to old man

Flowers place in midst of Big Thicket & arranged for use of 2 hands.

Then went on 2 miles & camped at old oil well beside 7 miles N.E. of Escatoga. Remained here hunting in the thicket till Dec. 7.

Dec. 15 to Lone Lake.

Dec. 16. to Sam Griffins place

Dec. 17. to Escatoga again

Dec. 18. to Bragg & Cleveland

Dec. 19. to Navasota.

Dec. 16. To Houston & remained over night.

Dec. 17. Left Houston at 6:30 AM, on
G.P. R.A. for New Orleans.

Big Thicket along all streams across
east Texas southern La. Almost
surrounds Beaumont, Lake Charles
wide prairies between streams.

Cotton, rice, & sugar cane the
main crops. Very little fruit.

Apples won't grow as bear, pears are
poor & trees do not live long - are
troubled with blight. Peaches are
poor & trees soon die. Oranges
do well till a freeze comes.

There has been little frost in
southern La. as yet & the sugar
cane crop is not nearly all gathered.

The conspicuous plants of the
Thicket all the way to New Orleans
are cypress, Tupla gum, Myrica
Magnolia (Bay), Sabel etc.

Dec. 18 New Orleans via N & Z. & So.
9:35 AM.

Same old Big Thicket plants all
along on bottoms, Myrica & Bay
abundant & conspicuous, Big marshes,
open woods of Pinus taeda & palustris.

Oranges ripening on trees, banana
trees not pasted.

Mainly poor white sand and
open pine woods from Bay St. Louis
& Mobile - some ^{small} swamps along
streams - After passing Mobile
we go for nearly 100 miles through
swamps & across many streams &
lagoons. These swamps are
dense jungles of cypress, bay,
Tupla gum, saw gum, Myrica,
Sabel & vines - a red bellied
Smilax being abundant & passing
vines common.

Later we strike into sandy
pine woods again, some fine
forests of long leaved pine & mostly
forested for turpentine. At points
the country is somewhat hilly &
ridged & the timber mixed pine
& deciduous trees -

All of these southern woods are
ben cypress pines, live oaks, pin oaks,
magnolia + evergreen shrubs.

At Georgiana the country is
gently rolling + ridged, of red sand
and with good timber of pines
taeda, echinata + leae polluetris,
mixed with deciduous trees.

Extensive woods, few farms +
little towns, no fields or crops.

About the same to Greenville
where it grew dark, and apparently
the same to Montgomery.

Zaos Indian Names of trees -
for Sun Elk.

- Pinus ponderosa* - wey enéma
Pinus flexilis - pah wey sana - water pine
 " *aristata* - kham wheéna - lionstail
 " *edulis* - tah wéna - name of the nut
Pseudotsuga -
Abies concolor - uh pah yea mé na ma - hair leaved spruce
 " *lasiocarpa* - kui pah mu nah - soft bark spruce
Picea engelmanni - kui koa wáhna - bear bark spruce
 " *mariana* - Pah kui wah na - water spruce
Populus tremuloides - nau téna -
 " *angustifolia* - tu sa' na -
Quercus gambeli - Qua slá na -
Juniperus monosperma - hu'na - red cedar
 " *flaccida* - hu pah há na - gray cedar
 " *communis* - pah hu wa léne ma - water cedar medicine
Oser glabrum - pah tu téi coo una - white willow
Salix cordata - Cah nea tsá na - Buffalo willow.
 " *nigra* - Eah tsá pah yín na - Red willow, name of tribe
Prunus plum - Poo loo loó nah -
Alnus incana - Zoo loo loo nah -
Betula occidentalis - Zoo huá u nah -
Ribes leptanthum - pe huél huéna - mad ache berries
 " *diversum* - coa pah nue too' nah - bear water berries
 Raspberries - teel huéna - ground berries
 Strawberries - tse ha teel huéna - rat berries.

Zas Indian Numerals

(From Sam Elk - Manuel Mondragon
Zudli tu)

- | | |
|-------------------|------------------|
| 1. Waina | 50. Punua te |
| 2. Waina (wi'ena) | 51. Punua tewana |
| 3. Pahua | 60. Matsi te |
| 4. Weana | 61. " " wana |
| 5. Punua | 70. Zau te |
| 6. Matsi | 71. " " wana |
| 7. Zau | 80. Whele te |
| 8. Whele | 81. " " wana |
| 9. Whia | 90. Whea te |
| 10. Zern | 91. " " wana |
| 11. Zewana | 100. Ze te |
| 12. Zewana | 200. We te te |
| 13. Ze pahua | 300. Pahua te te |
| 14. Ze wean | 400. Wean te te |
| 15. Ze punua | 500. Punua te te |
| 16. Ze matsi | etc |
| 17. Ze tau | 1000 Ze te te |
| 18. Ze whele | |
| 19. Ze whia | |
| 20. Weta | |
| 21. Witawana | |
| 30. Pahua te | |
| 31. Pahua te wana | |
| 40. Wean te | |
| 41. Wean te wana | |

- | | | | |
|--------------------|---|----------------------|------------------------|
| Rattlesnake | - | Pah tau una | - |
| Lizard | - | Nah tu una | - Sceloporus graciosus |
| " | - | Pah tu' tau la una | Cnemidophorus |
| Horn toad | - | Coa talahala una | |
| Frog | - | Hue wata la una | |
| Turtle | - | Isa lu' na | - Rattle box |
| Crotaphytus halyi, | - | Coa tal' wa se eva - | |

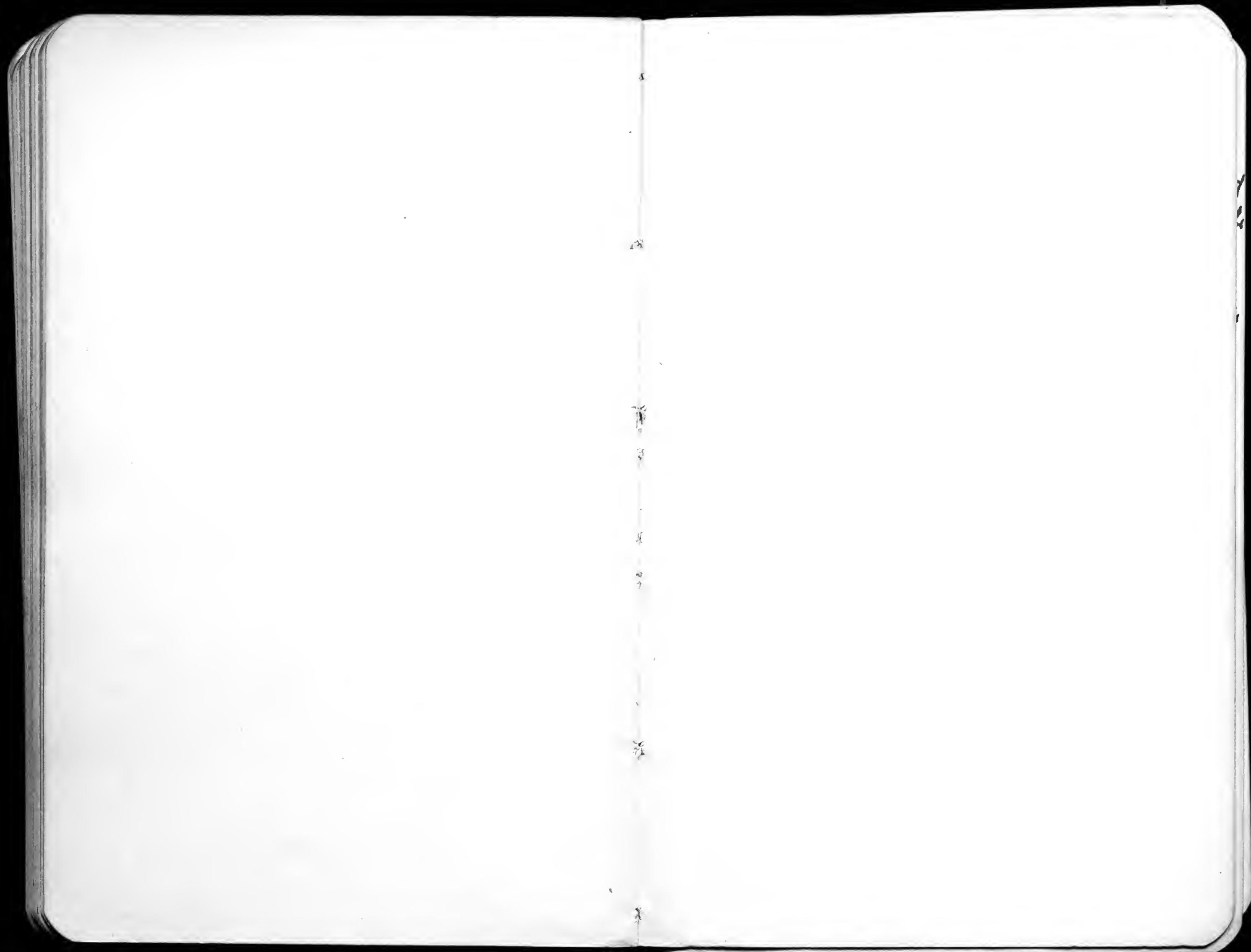
Quita pear na na wa - Red earth Mtn.

Abies lasiocarpa or *arizonica* = Kui pah mu nah -
means soft bark.

Picea engelmanni - Ku' koa wa nah, bear bark spruce

Picea pungens - Pah kui wa nah = water spruce.

(Nah ku' na - leaves of all colors
the man teaching his boys to dance. see photo)



Taos Names of Mammals

<i>Odocoileus hemionus</i>	-	Pah' va	-
" <i>virginianus</i>	-	Pah' hu' wa ra	- stag deer, white follower
<i>Cervus</i>	-	Zah' i' va	- spotted, when young
<i>Caracacus</i>	-	Cah' nu' na	-
Buffalo	-	Zah' ah' va	-
Antelope	-	Pean' g' a' na	- mountain sheep.
Ovis	-	g' u' a' na	-
Common sheep	-	Zah' qu' va	- wood pitch squirrel
<i>Sciurus aberti</i>	-	Zu' wa la ana	- from his voice
" <i>nanivensis</i>	-	Mu' yu' na	-
<i>Spizoptilus lateralis</i>	-	Qua' w' hu' na	-
<i>Eutamias</i>	-	Ki' ah i' va	-
<i>Cynomys gunnisoni</i>	-	Deo Pah' ka che wa	- ditto's mouse
<i>Sorex</i>	-	Pah' hi le' na ra	-
<i>Microtus</i>	-	Pah' na	- Pan' u' na = earth
<i>Thomomys</i>	-	H' a' na	- thief
<i>Nestora orolestes</i>	-	Kla' ta' ha' ra	- cactus mouse
" <i>fallox</i>	-	Ko' ah' ke' va	- black prairie dog
<i>Peromyscus</i>	-	Zu' e' pi' na	- jumper
<i>Spizoptilus grammurus</i>	-	Mum' po' si' wa	-
<i>Perodipus</i>	-	Pah' ya' nah	- water -
<i>Perognathus</i>	-	Pah' hak nu' u' na	-
Beaver	-	Ana' wa' pe' w' na	- Spruce rabbit
<i>Fiber</i>	-	Pe' w' na	- rabbit
<i>Lepus</i>	-	Cah' pah' tuna	- white jack rabbit
" <i>pinetis</i>	-	Cah' tua' pua' na ana	- black rumped jack rabbit
" <i>capensis</i>	-		
" <i>texianus</i>	-		

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Dog	-	Tau' gi' na	- Tau' la' na = pup -
Cat	-	Qua' lu' na	= little dog
	-	Muse' ana	- from voice
<i>Felis concolor</i>	-	Tham' we' vah	- hiding -
<i>Lynx</i>	-	Pean' muse' ana	- mountain cat
<i>Vulpes macrotis</i>	-	sal' pun' e' ana	- little black coyote
<i>Urocyon</i>	-	too' wa' te' le' ana	- little yellow coyote
<i>Coyote</i>	-	too' w' ha' na	- for his voice
<i>Canis estor</i>	-	too' wa' ta' la' ana	- little blue coyote
<i>Canis griseus</i>	-	Ca' le' va	- sater
<i>Procyon lotor</i>	-	Pa' su' de' va	- water dog
<i>Taxidea</i>	-	Ca' ld' na' wa	-
<i>Mephitis</i>	-	Cue' u' la' na	-
<i>Putorius</i>	-	Ha' na' u' na	-
<i>Ursus americanus</i>	-	Cua' pu' va' a' na	- black bear
"	-	Izla' cu' na	- (climbs trees) (wood bear)
<i>Ursus boribillus</i>	-	Cua' pah' ty' a' na	- Gray bear
Fishes			
<i>Lutra</i>	-	Pah' hua' pi' va	- water
<i>Luticola</i>	-	Sla' mi' na	- tobacco bag
<i>Mustela</i>			
Bat	-	Zi' le' yak' ah' na	- from his squeak
Butterfly	-	Zi' de' le' mi' ya' ah' na	-
Fiber	-	Pah' hak' nu' u' na	- water -
<i>Ochotona</i>	-	Za' ka' na	- from his voice
<i>Erethizon</i>	-	Sa' na' na	-
<i>Arctomys flaviventris</i>	-	Pean' che' ha' na	- mountain mouse

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